

Weekly Report

2017.05.08-2017.05.14

1. This Week

Wavelines

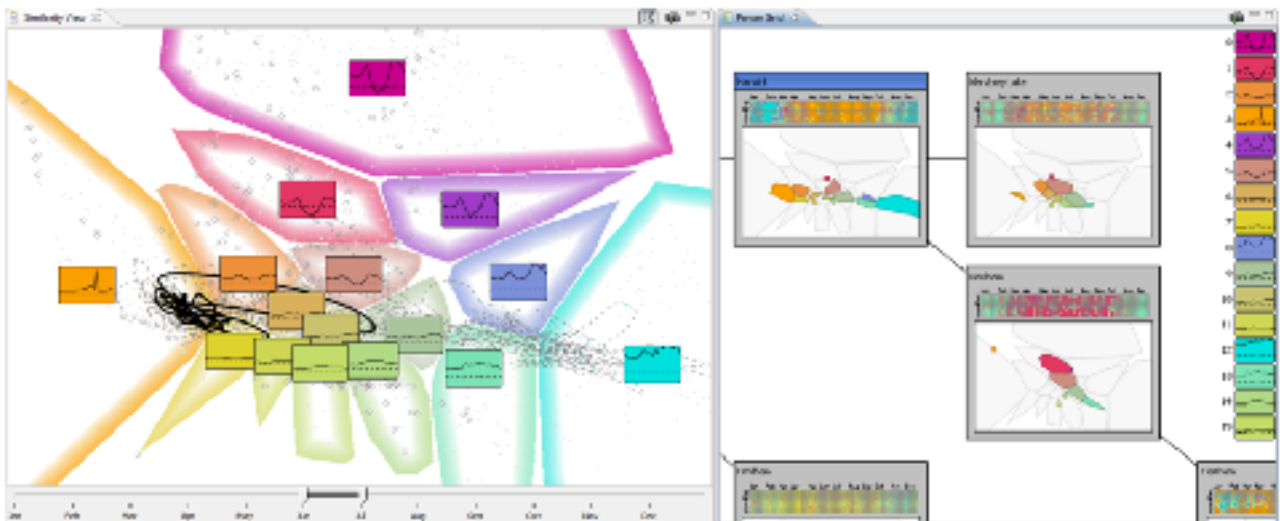
- 1.learn about the coding details of the wavelines system from its source code
- 2.prepare to revise the source code of the system with Wang Qi in May to June
- 3.read the book “statistical control theory”
- 4.read several paper about anomaly detection

Others

- 1.Revise the 5th chapter of the treatise: uncertainty data visualization
- 2.Prepare the blog material of the group weibo for next week

paper reading

1.Visual Analysis of Time-Series Similarities for Anomaly Detection in Sensor Networks



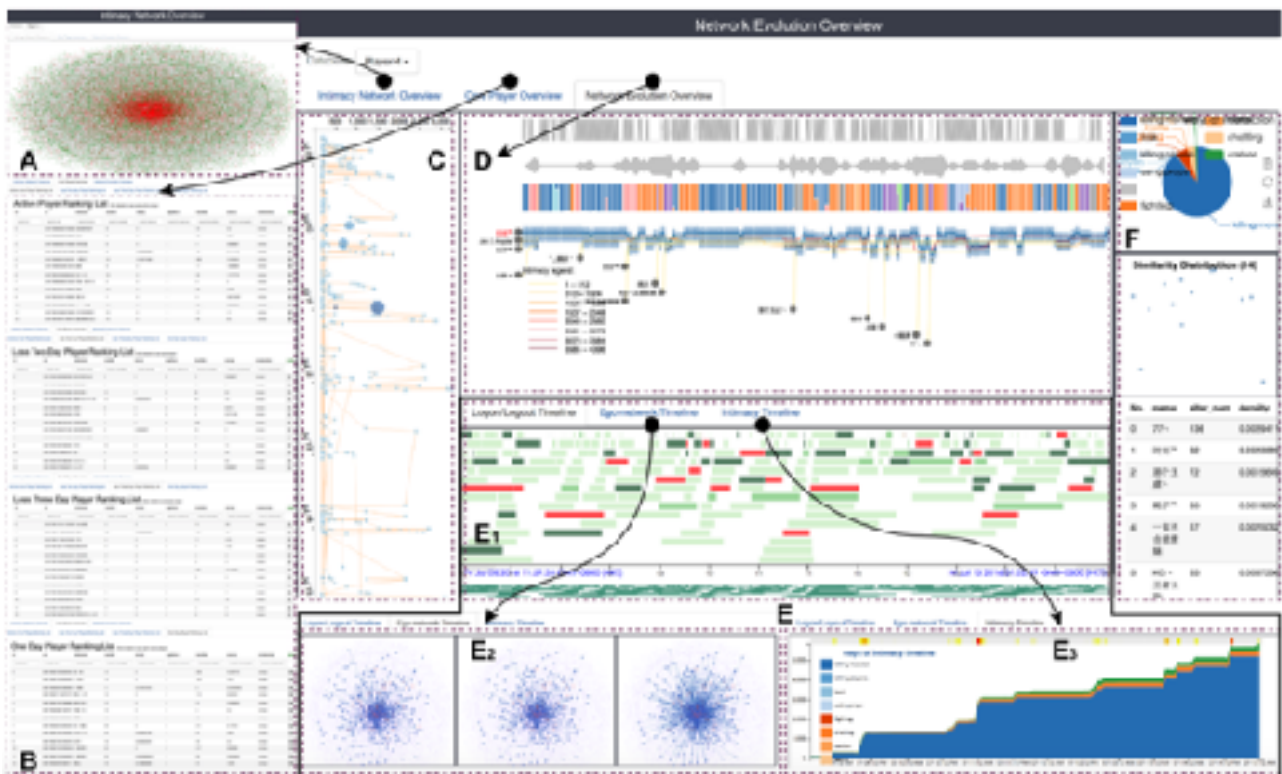
This paper mainly presents a similarity-based clustering method for pattern analysis in univariate sensor networks together with a metro map based network view. It uses an advanced DTW algorithm to measure the similarity between pairs of temporal sequences and then project the data points to a lower dimensional view in the system by using dimension reduction methods. Clustering is also used after projection. The change of patterns over time for a selected sensor is indicated by the black spline (very similar to ‘Snapshot’ in presenting temporal information). As we can see, clustering method and similarity method are always used together in anomaly detection. And such method of showing the temporal variation by linking the time adjacent data points by splines could help in anomaly detection, although it might be difficult to determine the time order of the linked points.

2. MatrixWave: Visual Comparison of Event Sequence Data



This paper presents a matrix and sankey diagram based visualization design for comparative visualization of two event sequence datasets collected on different days or from users with different demographics. It displays step-by-step clickstream data as a series of transition matrices rotated in a zig-zag manner. The comparison of two datasets is indicated by the color and size of the nodes in the matrix and the sankey like design between matrices. Such design requires a pre-defined measure to compare two data points.

3. A Visual Analytics Approach for Understanding Egocentric Intimacy Network Evolution and Impact Propagation in MMORPGs



This paper presents a major visual design to support the analysis of dynamic change and mutual influence of dynamic ego network in MMORPG games (see in the part D in the picture above). The temporal information is encoded on the horizontal axis and all the nodes in the ego network is wrapped in a rectangle. The position of the rectangle on the vertical axis is computed according to the positions of the already arranged nodes. Newly added nodes are added from top to bottom beneath the already existed nodes. This storyline like dynamic ego network analysis shows the change of the network but is not easy to recognize each single node in the network.

2. TODO

- 1.treatise writing
- 2.sqc method reading
- 3.keep up with the wavelines and network security project